APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,945	03/15/2005	Ercan Ferit Gigi	NL02 0857 US	2403

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PHILIPS ELECTRONICS NORTH AMERICA CORPORATION
INTELLECTUAL PROPERTY & STANDARDS
370 W. TRIMBLE ROAD MS 91/MG
SAN JOSE, CA 95131

EXAMINER
LERNER, MARTIN

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
02/15/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1 to 11* is/are pending in the application.

　　4a) Of the above claim(s) *4 to 7* is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1 to 3 and 8 to 11* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *15 March 2005* is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a) ☒ All b) ☐ Some * c) ☐ None of:

　　　　1. ☒ Certified copies of the priority documents have been received.

　　　　2. ☐ Certified copies of the priority documents have been received in Application No. _____.

　　　　3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1.   Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Figure 1 is described as prior art on Page 1, Line 16 to Page 2, Line 17 of the Specification.

2.   The drawings are objected to because Figures 3 and 5 should be given labels to make them easier to understand in English.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office Action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, Applicant will be notified and informed of any required corrective action in the next Office Action. The objection to the drawings will not be held in abeyance.

Specification

3.   The disclosure is objected to because of the following informalities:

It is questioned whether the term "pitch bell" is the correct idiomatic term for what is disclosed throughout the Specification. Specifically, the term "pitch bell" is not the standard term found in the prior art, and a better and more common term might be "pitch cycle". Applicant should consider whether it is appropriate to replace the term "pitch bell" with "pitch cycle" in the Specification.

On Page 5, Lines 31 to 33 are unclear due to poor quality of photocopy. Applicant should replace the two sentences so that there isn't any question of error in final printing of an issued patent.

Appropriate correction is required.

Claim Objections

4.   Claims 4 to 7 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend upon another multiple dependent claim. See MPEP § 608.01(n). Accordingly, claims 4 to 7 have not been further treated on the merits.

Claims 4 to 7 are multiple dependent claims, and all depend at least upon claim 3, which is already a multiple dependent claim.

Claim Rejections - 35 USC § 101

5.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6.   Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 11 is a "signal claim". The USPTO takes the position that a signal claim is non-statutory because it does not fall within one of the recognized categories of invention. See MPEP §2106.

Claim Rejections - 35 USC § 112

7.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8.   Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Independent claim 11 is equivalent to a "single means claim" because it recites only a single element having predetermined characteristics. See MPEP §2164.08(a).

A single means claim, *i.e.*, where a means recitation does not appear in combination with another recited element of means, is subject to an undue breadth rejection under 35 U.S.C. 112, 1st ¶. *In re Hyatt*, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983)

Claim Rejections - 35 USC § 103

9.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10.   Claims 1 to 2 and 8 to 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Violaro et al.* (*"A Hybrid Model for Text-to-Speech Synthesis"*) in view of *Ljolje et al.* (*"Synthesis of Natural Sounding Pitch Contours in Isolated Utterances Using Hidden Markov Models"*).

Concerning independent claims 1, 8, 9, and 11, *Violaro et al.* discloses a method, computer program product, and computer system for performing text-to-speech synthesis, comprising:

"determining of required pitch bell locations in the time domain of the first sound signal, the pitch bell locations being distanced by one period of the first fundamental frequency" – a first step in speech analysis is to provide a voiced/unvoiced classification for the speech segments and a pitch marking; pitch marks are denoted by *pm(i)*, and

represent pitch periods as an integer number of samples (II. Pitch Marks: Page 427:

Right Column); a pitch period for a segment is equivalent to a fundamental frequency in

the time domain, as shown by Figures 1 to 4; thus, for text-to-speech synthesis of the

word "life", a phonetic representation is implemented by the concatenation of four

polyphones #I + la + aif + f# (I. Introduction: Page 426: Left Column); thus, a first speech

segment is labeled with pitch marks;

"providing of pitch bells by windowing the second sound signal on pitch bell

locations in the time domain of the second sound signal, the pitch bell locations being

distanced by one period of the second fundamental frequency" – a symmetric Hamming

window centered at *pm(i)* is used for a noise component of a voiced segment (III. Noise

Component Calculation and Modeling: Page 428: Right Column: Figure 2); thus, an

identical procedure of pitch marking is performed on each segment for a phonetic

representations of "#I", "la", "aif", and "f#" before they are concatenated by overlap-add

(OLA); implicitly, pitch varies from segment to segment;

"performing an overlap and add operation on the selected pitch bells for

synthesizing the first signal" – after repetition of the procedure over all overlapped two-

pitch period segments, they are added up in a procedure known as overlap-add (OLA),

which is responsible for a gradual transition (III. Noise Component Calculation and

Modeling: Page 428: Left Column).

Concerning independent claims 1, 8, 9 and 11, the only element omitted by

Violaro et al. is "randomly selecting of a pitch bell from the provided pitch bells for each

of the required pitch bell locations". *Violaro et al.* discloses elements of a standard

overlap add procedure with pitch marking and modifications, and is concerned with

modification of pitch for segments in concatenation synthesis by separating speech into

a harmonic component and a noise component so that the resulting synthesized speech

has better subjective listening quality. However, *Violaro et al.* doesn't disclose providing

random pitch modifications to improve listening quality. Still, *Ljolje et al.* teaches a

method of changing the fundamental frequency for representation of phonetic structure

using a random number generator for speech synthesis. (Abstract) Models are

produced from data covering segmental effects and fundamental frequency changes

caused by the phonetic structure of words to be synthesized. (Production of Models:

Page 1075: Left Column) Synthesis of fundamental frequency contours is achieved

using a random number generator from a Gaussian probability density function for

fundamental frequency. (Synthesis: Page 1077: Left Column) The objective is to

preserve essential intonation in fundamental frequency movement over stylized

fundamental frequency contours. (Conclusion: Page 1079) It would have been obvious

to one having ordinary skill in the art to provide random selection of fundamental

frequency from a model as taught by *Ljolje et al.* in a method, computer program

product, and computer system of *Violaro et al.* for a purpose of preserving essential

intonation over more stylized fundamental frequency contours.

Concerning claim 2, *Violaro et al.* discloses a hybrid model for processing voiced

segments by a harmonic component and a noise component (III. Noise Component

Calculation and Modeling: Page 428: Left and Right Columns: Figure 2); a harmonic

component is equivalent to a "periodic component"; generally, either a first segment or a second segment can be "the second sound signal".

Concerning claim 10, *Violaro et al.* discloses that speech analysis provides voiced/unvoiced segment classification ("sound classification data") (II. Pitch Marks: Page 427: Right Column); implicitly, voiced/unvoiced segment classification is stored, at least temporarily, during processing of text-to-speech synthesis for each segment ("an interval containing the second sound signal").

11.   Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Violaro et al.* in view of *Ljolje et al.* as applied to claims 1 and 2 above, and further in view of *Kagoshima et al.*

Violaro et al. discloses segments that can be voiced or unvoiced, but does not expressly disclose segments that can be a voiced fricative. However, voiced fricatives are known components of an inventory of segments for speech synthesis. *Kagoshima et al.* teaches a speech synthesizer that superimposes pitch waveforms according to a pitch period to generate a speech signal (Abstract), where the speech synthesizer comprises a voiced speech synthesizer and an unvoiced speech synthesizer. An unvoiced speech synthesizer generates an unvoiced speech signal when the phoneme is a voiced fricative. (Column 3, Lines 31 to 63: Figure 1) The objective is to improve speech quality and provide flexible control over voice variety. (Column 2, Lines 9 to 11) It would have been obvious to one having ordinary skill in the art to apply the method of pitch marking of voiced and unvoiced segments of *Violaro et al.* to voiced fricatives of

Kagoshima et al. for a purpose of improving speech quality and control over voice variety in a speech synthesizer.

Conclusion

12.   The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Bitzer et al., Gleason, Gibson et al., Sgroi, Gigi, Inoue et al., Brandingham et al., and Kobayashi et al. disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
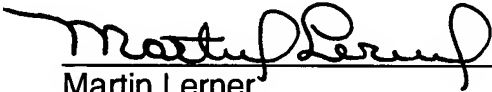
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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ML
1/11/08

Martin Lerner
Examiner
Group Art Unit 2626